MARINE SAFETY OFFICE
HONOLULU

# COMMERCIAL FISHING VESSEL CASUALTY STATISTICS THROUGH 1997

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# Executive Summary

**Objectives**

This report was developed for the Hawaii Ocean Industry community and Coast Guard (CG) to use as an aide in making risk management decisions. The intent was to collect information, identify problem areas so that companies could take proactive measures to prevent fishing vessel related casualties and incidents, and for the CG to disseminate risk information to the maritime community. The information will serve to heighten the maritime and ocean user community's awareness of casualty risks and ultimately reduce fishing vessel casualties.

To determine if present Coast Guard activities are assisting the fishing community. Coast Guard resources should be used to reduce the number of casualties.

**Scope**

This report is a brief recap of commercial fishing vessel casualties, which occurred during 1997.

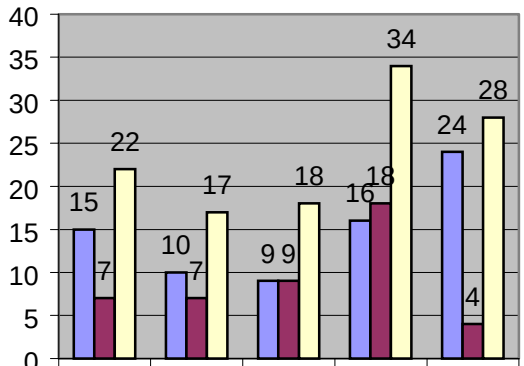
Attached to this update is a copy of the original Commercial Fishing Vessel Casualty Statistics Report produced in 1996. The original report serves as a statistical baseline for analyzing future efforts to stem casualty risks associated with commercial fishing vessels.

**Goals**

Reduce the number of casualties and incidents by 20% over a five-year period.

**Conclusions**

FISHING VESSEL CASUALTIES BY YEAR




| | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|
| VESSELS WITHOUT DECALS | 15 | 10 | 9 | 16 | 24 |
| VESSELS WITH DECALS | 7 | 7 | 9 | 18 | 4 |
| TOTAL CASUALTIES | 22 | 17 | 18 | 34 | 28 |

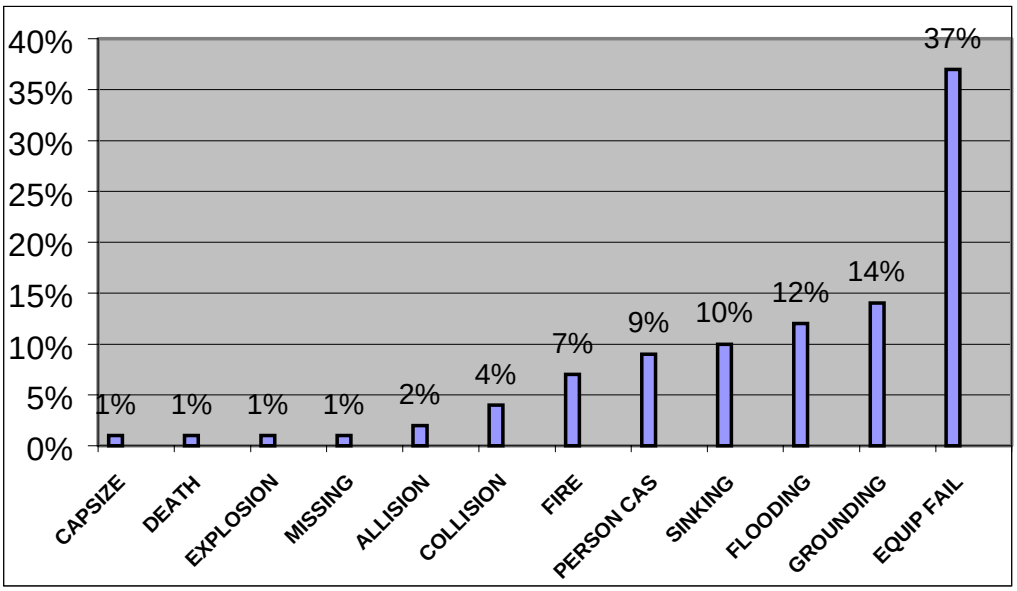
**Overall Casualties**

In total, the number of casualties decreased 17% - 34 to 28 from 1996 to 1997. Equipment failures continued to lead all categories as the major cause of casualties. It represented 26% of all casualties in 1996 and 32% in 1997. As indicated in the attached Commercial Fishing Vessel Casualty Report 1993 - 1996, poor maintenance programs are the primary cause of equipment failures.

The small size of the data does not allow a perfect analysis. It does, however, show that more effort needs to be placed in the human factors area of prevention. Nearly all these could have been prevented.

The trend does not show a continuous improvement. More emphasis needs to be placed on prevention. Improvement can be seen from 1996 to 1997 hopefully reflecting the awareness of local fisherman.

## FISHING VESSEL CASUALTY TYPES

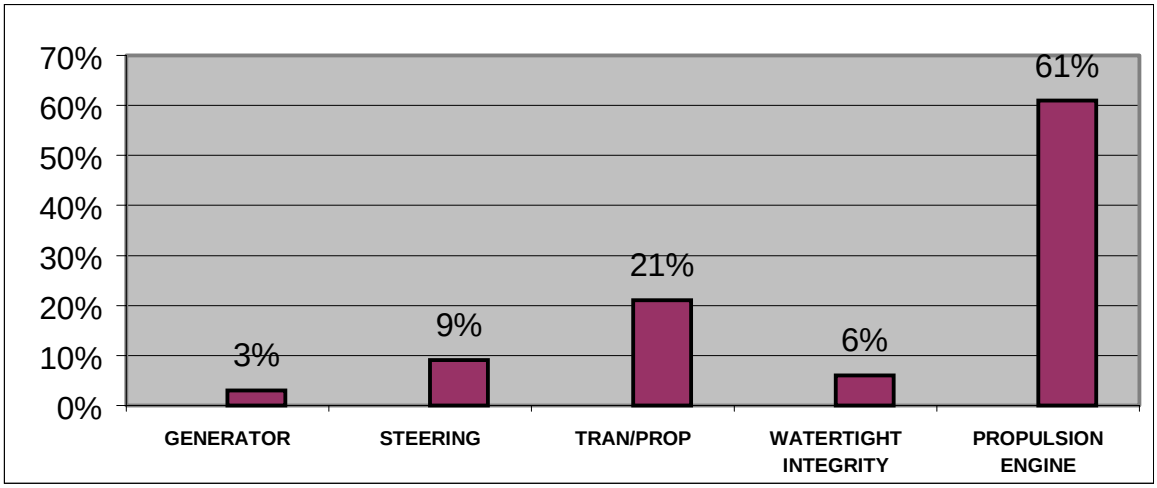



Equipment failures are by far the single largest casualty category accounting for 37% of all fishing vessel casualties. Ironically, most of these casualties could have been prevented if sound **maintenance** and repair practices had been followed. The leading casualty types provide sufficient data for further analysis.

## EQUIPMENT FAILURES

Equipment failure cases are described below by which ship system failed. Subsequent charts further explore which unit and then the specific part that failed.

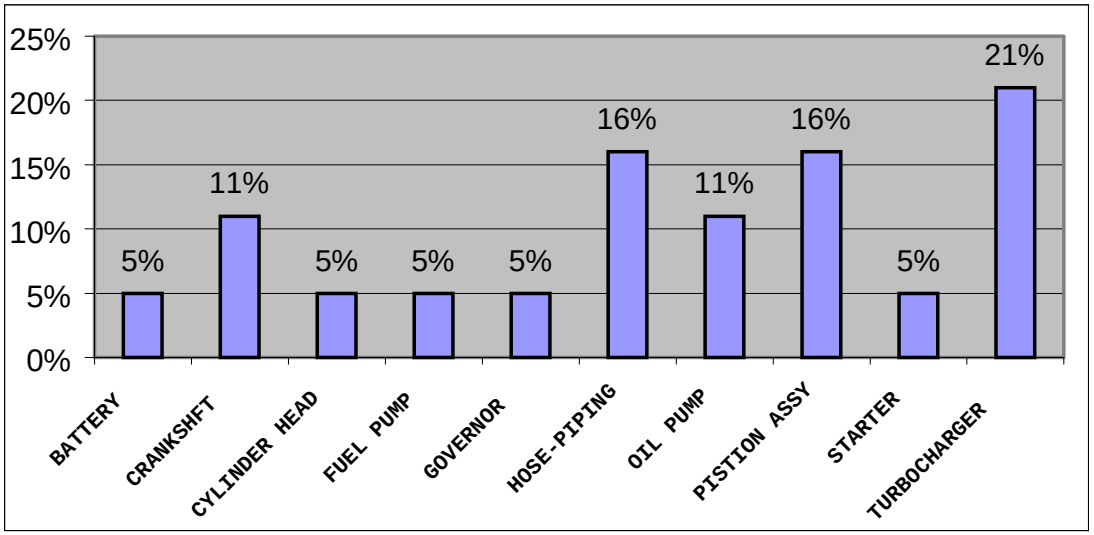
### FISHING VESSEL SYSTEM FAILURES




94% of all fishing vessel equipment failures result in a vessel losing its ability to maneuver leaving it at the mercy of the sea, at least temporarily. Fortunately only a few of these resulted in more serious events occurring such as a collision or grounding.

# EQUIPMENT FAILURE: PROPULSION ENGINE

(61% of system failures)

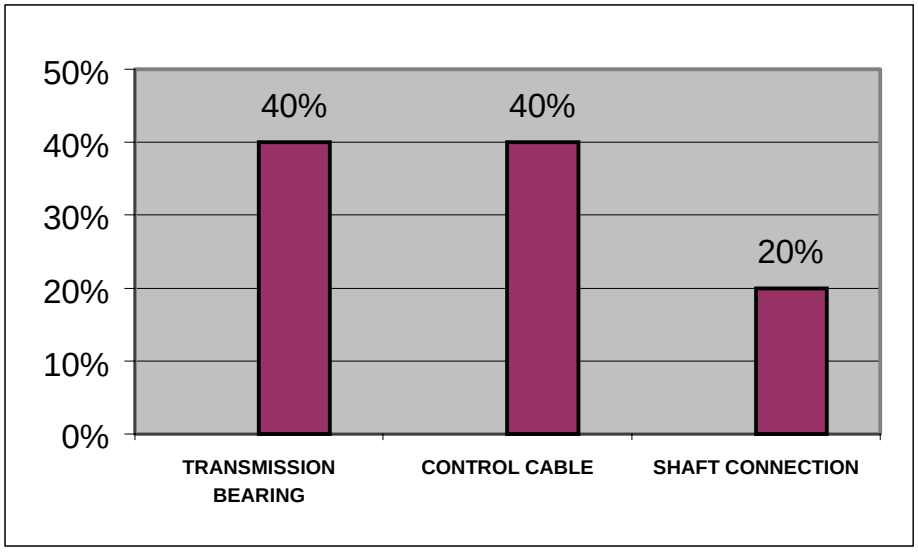



Of the above system failures, 28% could have been easily prevented if hoses, seals, gaskets and filters had been replaced in accordance with the manufacturers recommendations.

Example: A main propulsion engine cooling flexible hose ruptured. The operator did not detect the ruptured hose and continued to run the engine. Lack of coolant caused the engine to overheat and damaged the cylinder head, disabling the engine.

## EQUIPMENT FAILURE: TRANSMISSION

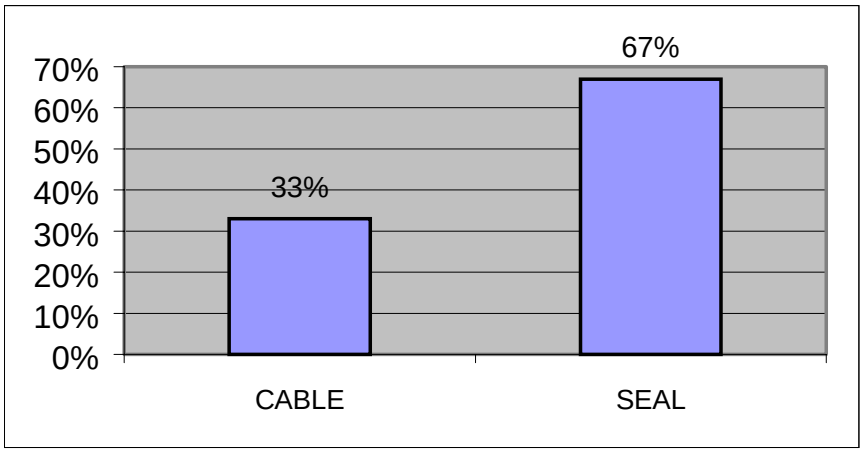
(21% of system failures)




All of the control cable failures could have been prevented if the cable and cable connections had been properly **maintained.**

# EQUIPMENT FAILURE: STEERING

(9% of systems failures)

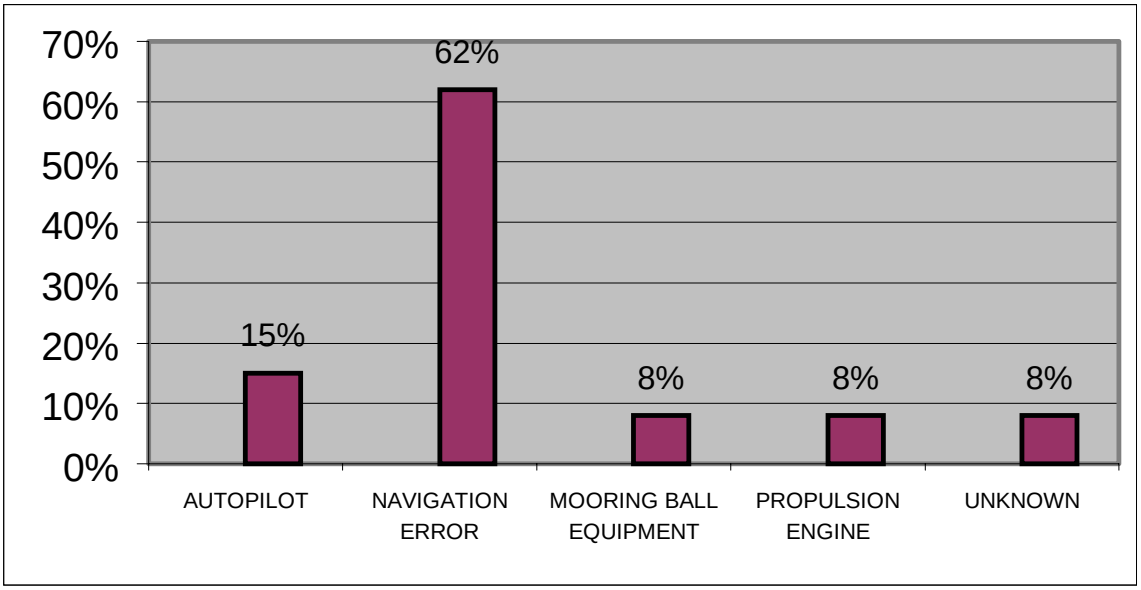



33% of steering casualties resulted due to the steering cable failing. The remaining occurred because the steering hydraulic ram seal failed. Both could have been prevented by proper **maintenance.**

Example: While transiting in a channel, a fishing vessel steering cable parted. The rudder locked and the crew was unable to steer. The vessel began to drift towards the reef. Fortunately the operators were able to drop anchor, make temporary repairs and return to port.

# GROUNDINGS

## REASONS FOR FISHING VESSEL GROUNDINGS




14% of commercial fishing vessel casualties occurring between 1993 and 1996 involved grounding. 62% of groundings were caused by the errors in judgement, primarily as a result of an improper decision or action by the master. Generally, many of these occurred because of poor navigation planning.

Examples: A fishing vessel grounded on Rose Atoll. The vessel broke up into four major sections and could not be salvaged. Heavy surf continuously pounded the vessel on the reef causing it to break apart and eventually sink. An investigation revealed that the grounding occurred because the vessel master did not maintain an adequate navigation watch. The following factors supported this determination:

This was the first transit for this master to the fishing grounds off of Rose Atoll.

The intended voyage was not planned in advance. A chart track line was never established.

Global Positioning system fixes were not used to establish the vessel's position.

The radar was not used during the voyage.

The vessel did not have proper charts of the local area.

The master used a universal plotting sheet which did not have Rose Atoll marked on it.

The crewmembers on the bridge watch were only told to report light sightings to the master. They were not instructed to monitor any navigational equipment.

The crew did not exchange any navigation information at watch rotation (course, speed, etc).

The vessel did not maintain watch standing orders.

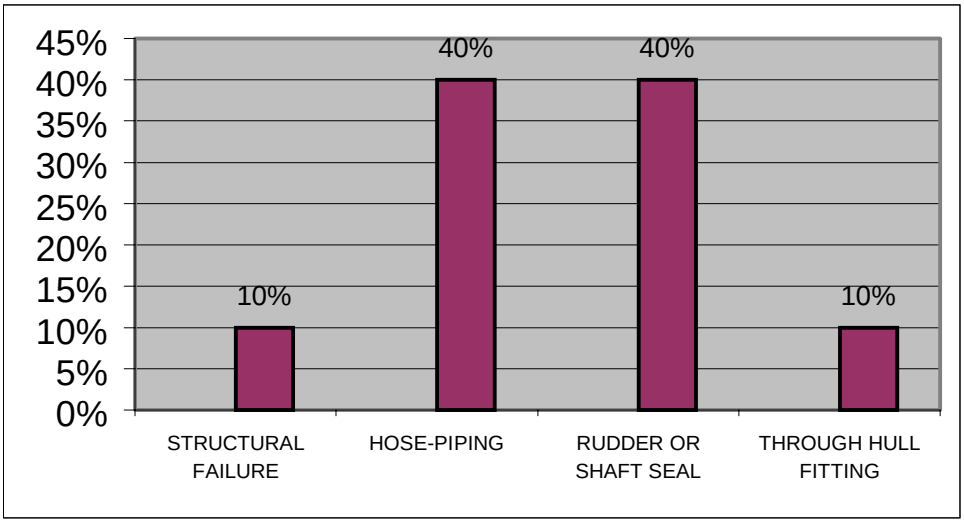
The vessel had been steering the same course for several hours without checking its set and drift.

Shortly after launching from Maliko Bay, Maui, a fishing vessel propulsion engine failed. The vessel drifted onto the rocky reef area of Pipipi Gulch. The crew unsuccessfully attempted to hold the boat's position with its anchor. The tide came in and larger waves pounded the vessel into the reef causing severe hull damage.

A fishing vessel was departing Kewalo Basin and the master set the autopilot before clearing the channel. It traveled 100 yards before the vessel altered course sharply to starboard and grounded at the entrance to Kewalo Basin.

# FLOODING CASES

## REASONS FOR FISHING VESSELS FLOODING

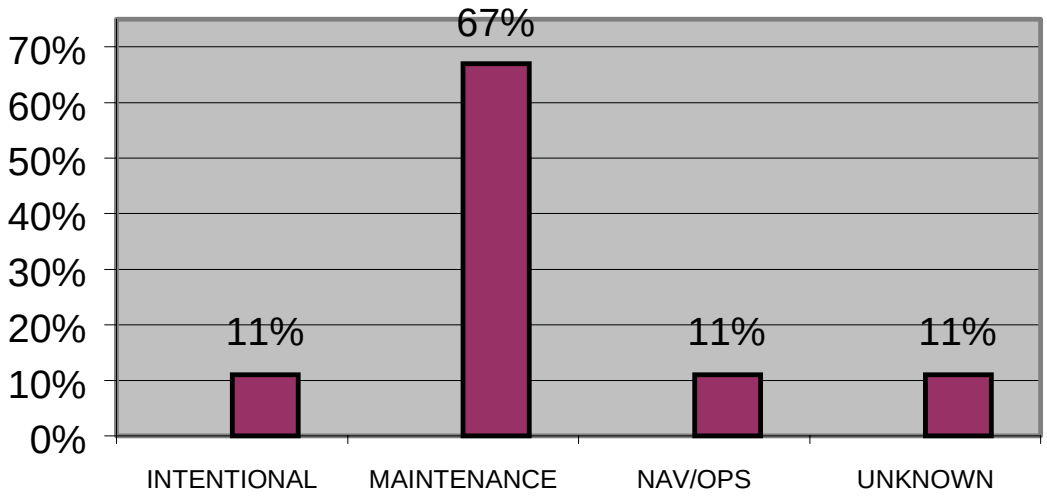



Of the casualties to commercial fishing vessel occurring between 1993 and 1996, 12% flooded but did not sink. 40% of these cases were caused by failed hoses or hose couplings. Subsequent investigations have concluded that proper **maintenance** would have prevented these casualties.

Examples: A fishing vessel moored to the pier was taking on water and in jeopardy of sinking. Coast Guard Station Honolulu and the Honolulu Fire Department dewatered the vessel, found the source (a faulty hose coupling) and stopped the flooding.

A fishing vessel flexible hose failed on an engine driven cooling pump and began filling the engine room. After temporary repairs were attempted, the captain tried to restart the engine. Continued attempts to restart the engine caused overheating of the main electrical cables and an electrical fire ensued.

## FAILURES THAT RESULTED IN FISHING VESSELS SINKING



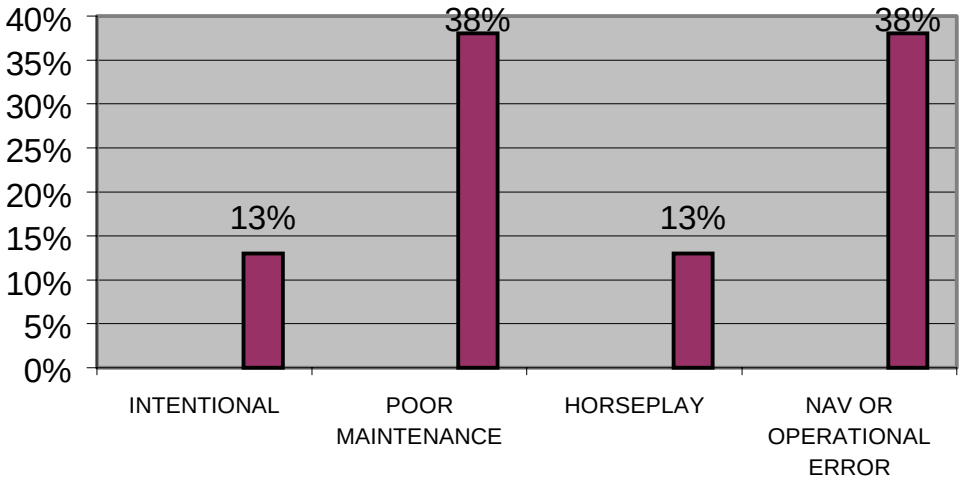

10% of commercial fishing vessel casualties occurring between 1993 and 1996 resulted in the vessel sinking. 67% of these sinkings were due to poor vessel **maintenance**. The causes of two sinkings are unknown although it is believed that one vessel simply filled up with rainwater and sank. One sinking was due to grounding.

Examples: At 2:30 in the afternoon a fishing vessel sunk approximately 30 miles north of Keanae, Maui. The sinking was due to uncontrolled flooding in the engine room through a hole in the hull. The hull had a history of structural problems. A Fishing Vessel exam had been conducted on the vessel, but a safety decal was not issued due to the vessel's condition.

At 11:00 at night a fishing vessel's sonar warning light indicated something was wrong but visual inspection showed all normal. Minutes later a second check revealed the engine room was flooding. Electric dewatering pumps were inundated and the flooding caused the vessel to sink. An investigation showed that the sonar tube dislodge allowing water to freely flow through a eight inch opening into the engine room.

During heavy sea conditions a fishing vessel began taking on water through leaking hatches. The vessel bilge pumps failed which resulted in the vessel swamping and eventually sinking.

## PERSONNEL CASUALTIES ON FISHING VESSELS



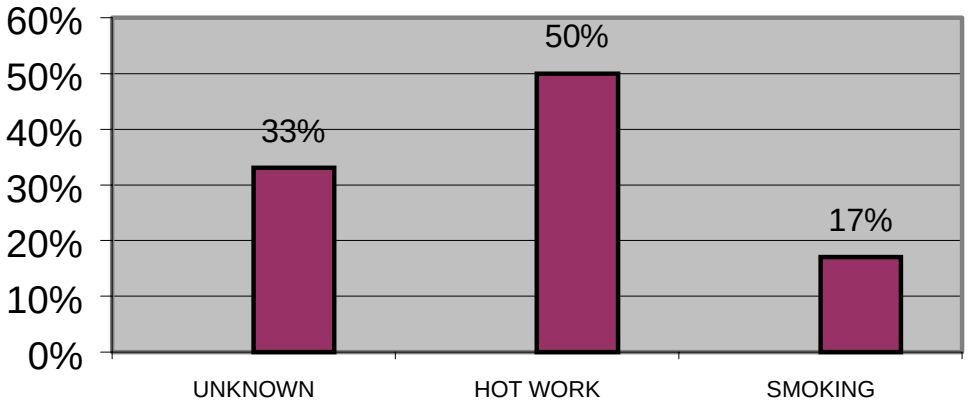

9% of commercial fishing vessel casualties occurring between 1993 and 1996 involved personnel casualties. Over 80% of the personnel casualties occurred to deckhands, with 50% of these casualties happening while retrieving fishing equipment.

Examples: While closing the bottom of the full purse net, the purse cable broke free of the side purse davit block and broke a deckhand's left leg. Probable cause of the accident was excess stress on the purse cable causing the safety lock on the purse davit block to break, which released the cable.

A crewman was injured when he was pulled overboard as his hand became entangled with the fishing tackle while trying to retrieve a live fish.

While on patrol a Honolulu Harbors police officer was flagged down by the owner of a fishing vessel and informed of the death of a crewmember. The crewmember was found lying on the deck of the accommodation space. The autopsy report concluded death resulted from carbon monoxide poisoning.

## FIRE CAUSES ON FISHING VESSELS




7% of commercial fishing vessel casualties occurring between 1993 and 1996 involved fire. 50% of these occurred as a result of hotwork being done aboard the vessel. Those fires would have been prevented with a properly trained and equipped fire watch.

Examples: A fire started in galley/living area of a fishing vessel. Hot sparks started the fire from hot work being completed on the vessel. No fire watch was assigned. The fire was extinguished by the Honolulu Fire Department. The resultant damage totaled around $50,000

While moored at Kewalo Basin a fire broke out in the vessel fish hold. Welding on the main deck ignited insulation/debris in the fishhold. The Honolulu Fire Department extinguished the fire with only superficial damage being done to the fish hold. The casualty was the result of hotwork without a fire watch.

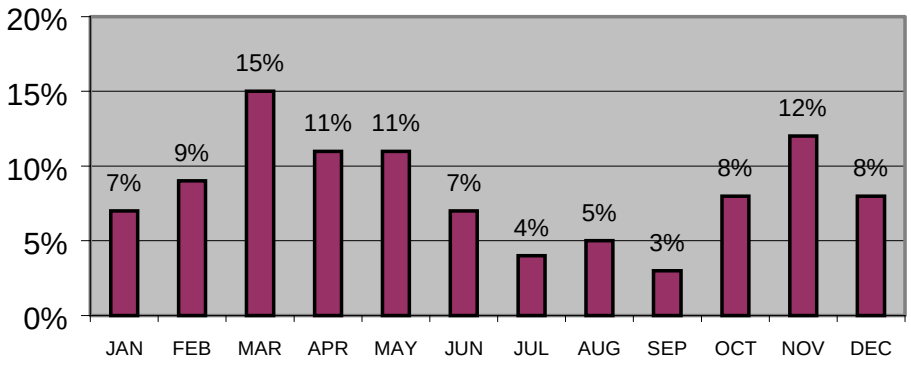
A crewmember lit a cigarette in the pilothouse and proceeded to smoke it. The vessel was approximately 5 miles from Kewalo Basin at the time (south of Sand Island). Approximately 6 minutes later, about the same time that the crewman finished his cigarette, an intense fireball (explosion) encompassed the whole interior of the vessel. What was done with the cigarette butt could not be recalled. He did not smell any unusual vapors nor does he recall hearing an explosion. The fire onboard the vessel quickly spread, engulfing the entire forward half of the vessel. The entire deckhouse and interior bulkhead structure was constructed of fiberglass reinforced plastic (resin) with a self-extinguishing foam core. However, the interior bulkheads were recently painted (2-3 days prior to the vessel

getting underway for this voyage) and this contributed to the intensity and thoroughness of the fire. Once ignited, the paint and bulkhead construction materials acted as an immediate fuel source for the fire. The high winds that were present quickly spread the fire throughout the vessel. There was no time to radio for help or breakout any fire-fighting or lifesaving equipment. The radio equipment, fire extinguishers, EPIRB, Life Rings, PFD's and the inflatable liferaft were consumed by the fire without being deployed or used. The Master was able to break through the fire with his clothing ablaze; unfortunately though, he received 3rd degree burns over 90% of his body and eventually died as a result. Of the 5 crewmembers aboard, 4 died. The vessel burned for close to two hours before the Coast Guard Group Honolulu Operations Center (OPCEN) was notified of the incident (0312) by Honolulu Harbor Controllers in Aloha Tower. After extensive investigation, the Coast Guard concluded that the primary source of the fuel for the fire was propane from the cooking stove supply system. There were many possible ignition sources on board the vessel (engine room machinery and crew smoking).

# MISCELLANEOUS

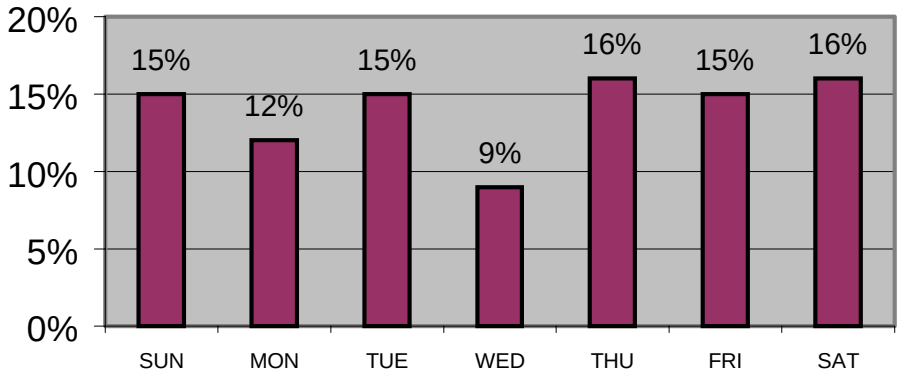
The following charts are provided to answer commonly asked questions.

## MONTHS FISHING VESSEL CASUALTIES OCCURRED

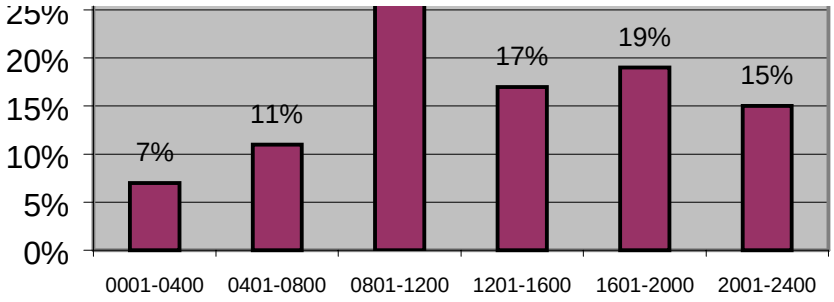



As expected most casualties occurred during the primary fishing season.

## DAY OF THE WEEK FISHING VESSEL CASUALTIES OCCURRED

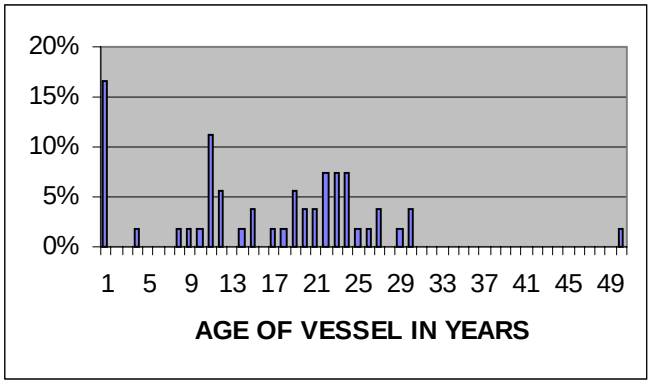


## TIME OF DAY FISHING VESSEL CASUALTIES OCCURRED



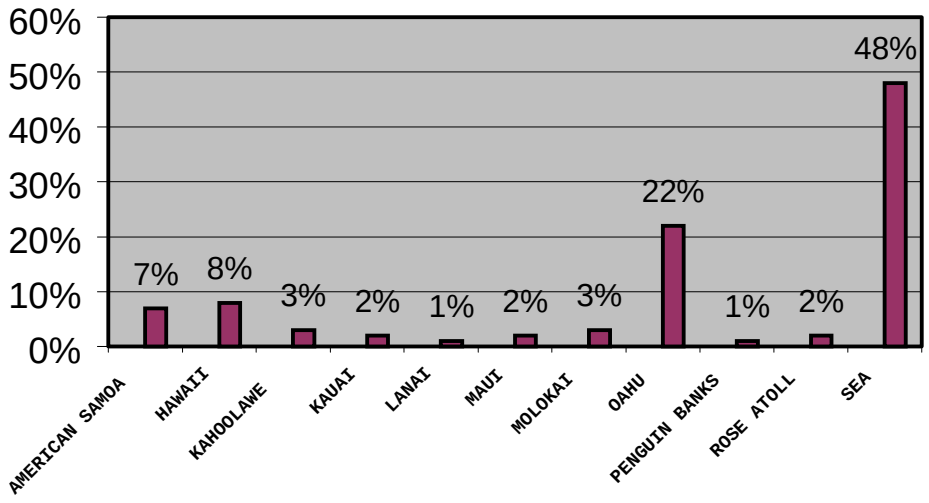

Close review of the casualty reports leads us to mistrust this chart. Often the time reported for when casualty occurred was actually the time the report was filled out or the time that the Coast Guard was initially contacted. In the future Coast Guard Investigators will ensure that the time casualties occur is recorded accurately.

## AGE OF FISHING VESSELS THAT SUFFERED CASUALTIES




Surprisingly, over 15% of the casualties occurred on vessels less than a year old. Over one third of the casualties to these new vessels were equipment failures.

## LOCATION OF FISHING VESSEL CASUALTIES



**SAFETY ALERTS**


FLOODING--UNINSPECTED FISHING VESSELS

Marine Safety Alert 03-96 December 5, 1996

Five uninspected fishing vessels recently suffered serious flooding casualties. Results of the Coast Guard investigations have found a common link, failure of through-hull fittings for machinery cooling water intakes. Specific problems include "single" clamped hoses coming loose from the through-hull fitting and clogged or frozen check valves in the discharge lines.

Recommended solutions:

Install metal ball or gate valves on all through-hull fittings.

Double clamp through-hull fitting hoses on both ends.

Check the proper installation and condition of through-hull fittings prior to getting underway.

Don't forget to follow-up with periodic **maintenance**!

This could save your life.

U.S. COAST GUARD

# SAFETY ALERT

CARBON MONOXIDE (CO) - INVISIBLE KILLER

Marine Safety Alert 01-97 February 4, 1997

The recent cool wave that swept through Hawaii may have led to the death of a crewmember aboard a fishing vessel in Honolulu Harbor. Found lying in a makeshift bed on the deck of the accommodation space, he had been killed by CARBON MONOXIDE poisoning while he slept. It is believed the man used a propane-cooking stove to warm the space prior to retiring for the night.

Within an enclosed space, a propane flame not only depletes the oxygen supply; it produces carbon monoxide gas. Breathing this colorless, odorless gas can be fatal within an hour when the air contains as little as 0.4%, and with just 0.04% concentration if inhaled over a 2-3 hour period. Devices such as alcohol heaters and stoves, propane heaters and stoves, catalytic heaters, oil lamps, gasoline lanterns and even charcoal stoves produce carbon monoxide because of incomplete combustion of fuel.

Sufficient ventilation must be provided whenever any flame is used within an enclosed space. As an added safety measure, mariners who use carbon monoxide producing devices should install carbon monoxide detectors aboard their vessels, especially within accommodation spaces. These devices are now much more reliable and can be purchased for approximately $15.00-$30.00. This is a small price to pay for the protection it can provide.

# CASUALTY DESCRIPTIONS (1997)

## Capsize

There were no reported capsizings during 1997.

## Death

Deaths decreased by 66% - 3 in 1996 and 1 in 1997. Black coral diving is the leading cause of death among fisherman.

*1997* One person died in 1997, again the result of diving for black coral. The diver attempted to retrieve black coral and was later found on the ocean floor entangled in lines used for diving operations.

## Explosion

There were no reported explosions during 1997.

## Missing

There were no reported missing persons during 1997.

## Allision

Three allisions occurred in 1997.

*1997* The first allision was human error on the part of the tug vessel Master who was in the process of towing a fishing vessel. The Master underestimated the 15 to 20 knot winds and misguided the towed vessel into a moored fishing vessel.

A second allision occurred because the Master was unfamiliar with the harbor and overestimated his ability to control the fishing vessel under the ballast and weather conditions that day, ultimately ramming into the pier.

The third allision involved two fishing vessels, however the cause was unknown.

## Collision

Two collisions occurred in 1997.

*1997* The first collision, which occurred in 1997, was the direct result of the fishing vessel operator's failure to keep a proper lookout. All members of the crew were sleeping at the time of the collision.

The second collision was a "hit & run." An unidentified vessel collided with a fishing vessel at anchor and left the scene.

## Fire

Fires decreased by 66% - 3 fires in 1996 and 1 in 1997.

*1997* A vessel's insulation caught fire, during hot work (welding) causing minor damage.

## Personnel Casualties

Personnel casualties decreased by 66% - 9 in 1996 and 3 in 1997.

*1997* Slips, trips, falls and cuts are the primary cause of personnel injuries: a passenger attempting to board slipped and fell sustaining minor injuries, a crewmember sustained a broken arm while gaffing a fish, and lastly, a crewmember received a laceration on the forehead after being struck by a fishing weight.

## Sink

No vessels sunk in 1996. Four vessels sunk in 1997.

*1997* Of the four vessels that sank in 1997, the causes for two anchored vessels are unknown. The third vessel sank after the Master lost control of the vessel in a storm and grounded on the rocks. Lastly, a contributing cause of the fourth vessel, which sank, was due to an inoperable bilge pump. However, the point of entry for incoming water and the apparent cause of the vessel sinking were unknown.

## Flooding

There were no reported flooding cases in 1997.

## Grounding

The number of grounding (5) did not change from 1996 - 1997.

*1997* The cause of two of the grounding cases' was undetermined. The remaining grounding cases are as follows: a vessel lost its main propulsion and drifted onto the rocks, another vessel slightly touched bottom after the master misguided the vessel while mooring to the dock, and lastly, a vessel Master, unclear as to his location, with inadequate charts and limited navigational equipment, grounded his vessel while enroute to a mooring location

## Equipment Failure

As indicated above, equipment failure casualties' (9) did not change from 1996 - 1997

1997 Equipment failures represented 32% of all casualties in 1997. As indicated in the attached Commercial Fishing Vessel Casualty Report 1993 - 1996, poor maintenance programs are the primary factor in maintaining equipment failures as the dominant cause of casualties. Refer to pages 8 - 11 in this attachment for more information on equipment failure details.